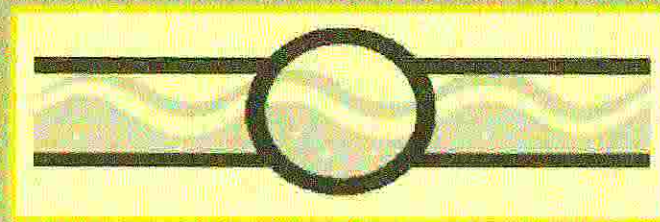
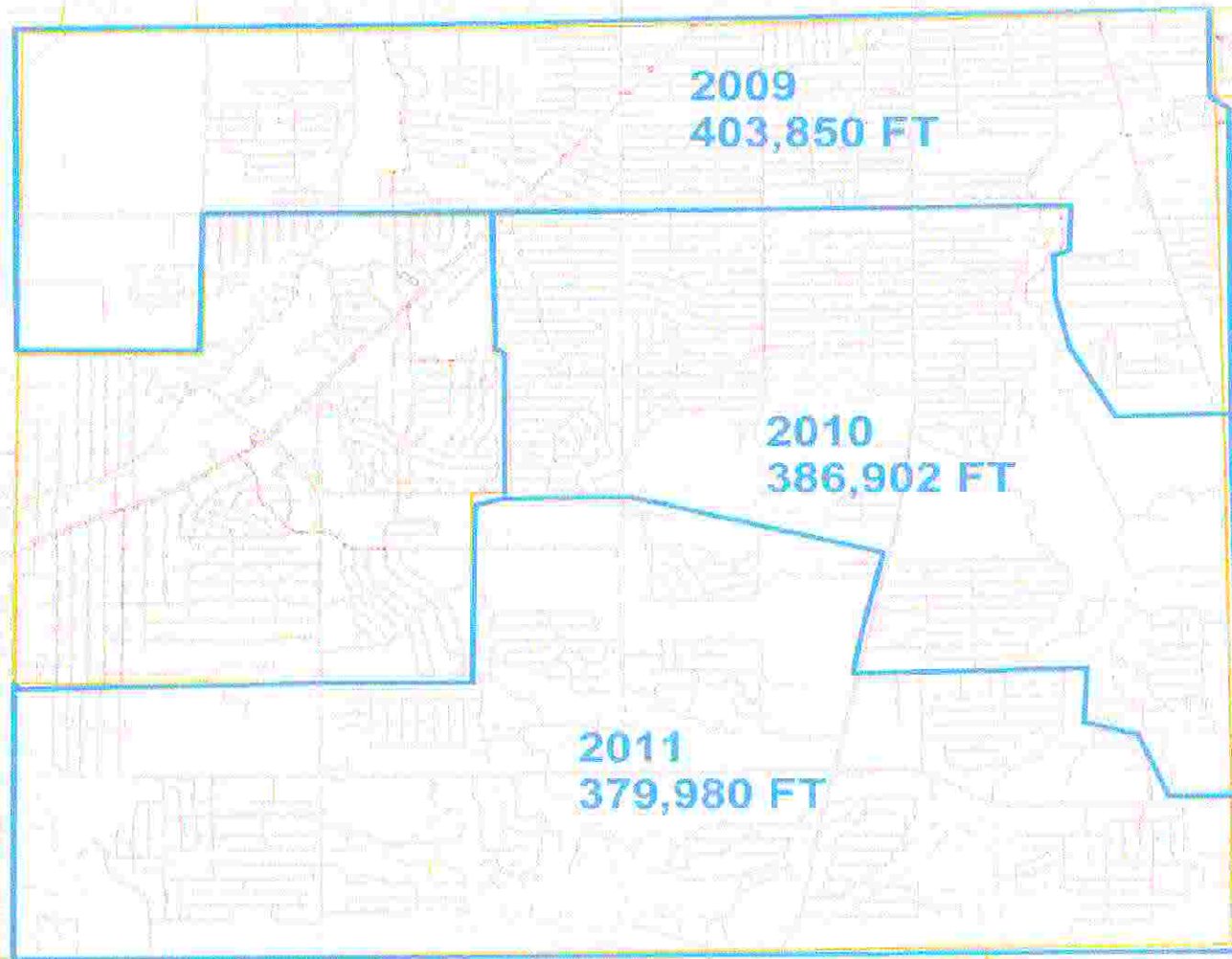


Cuyahoga County Sanitary Engineering Division

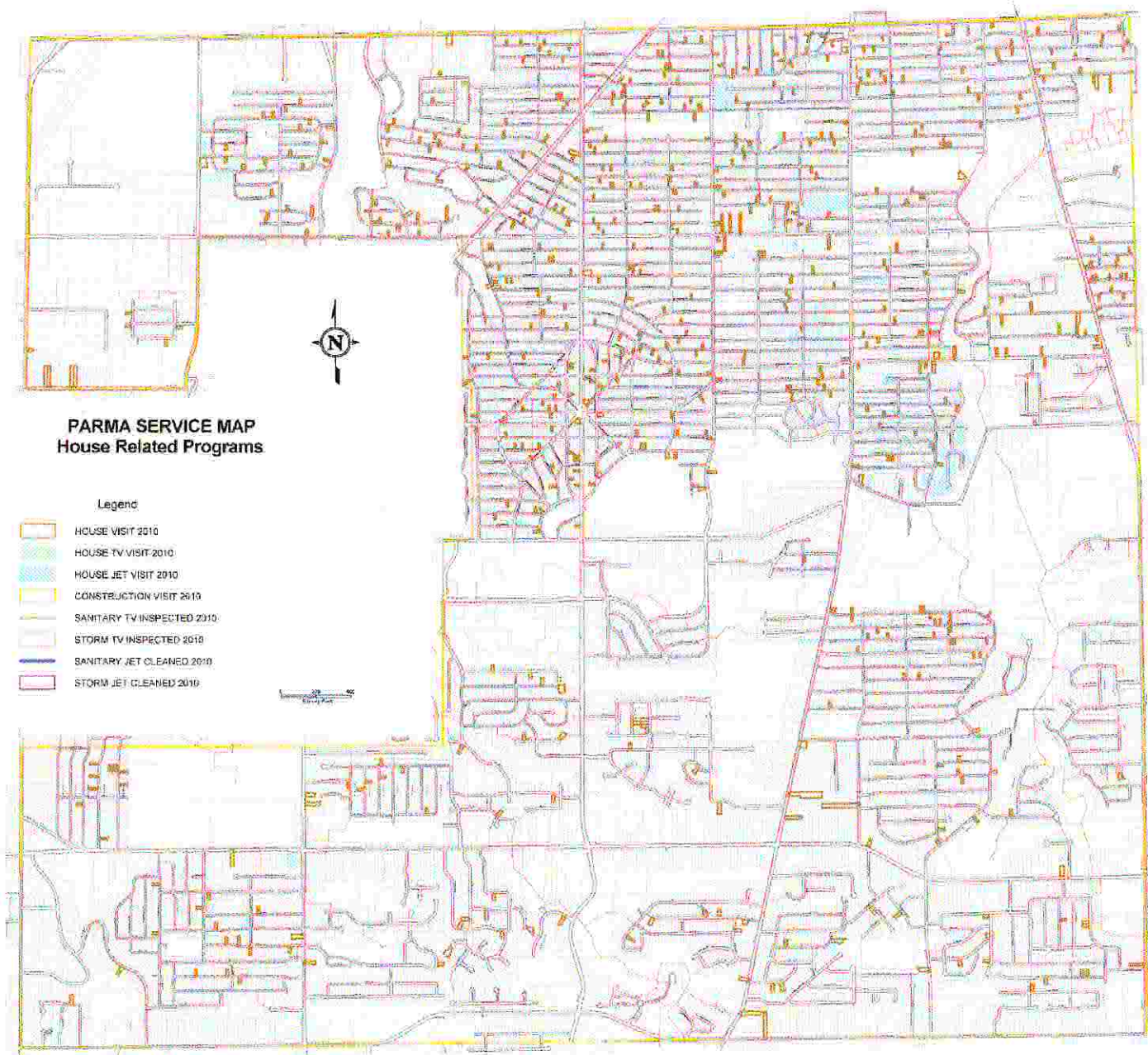
Robert C. Klaiber, P.E., P.S.



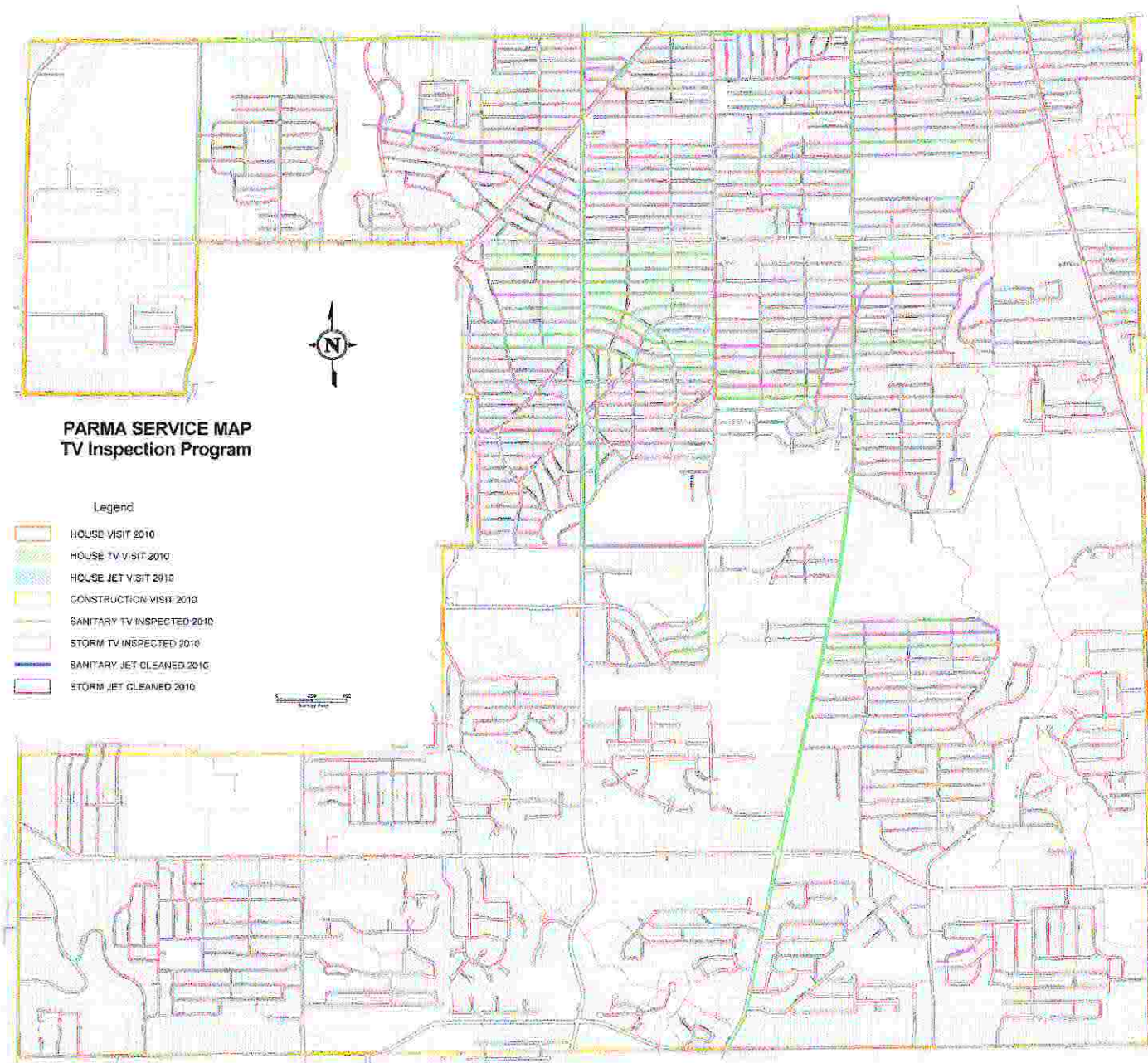
Three Year Maintenance Plan



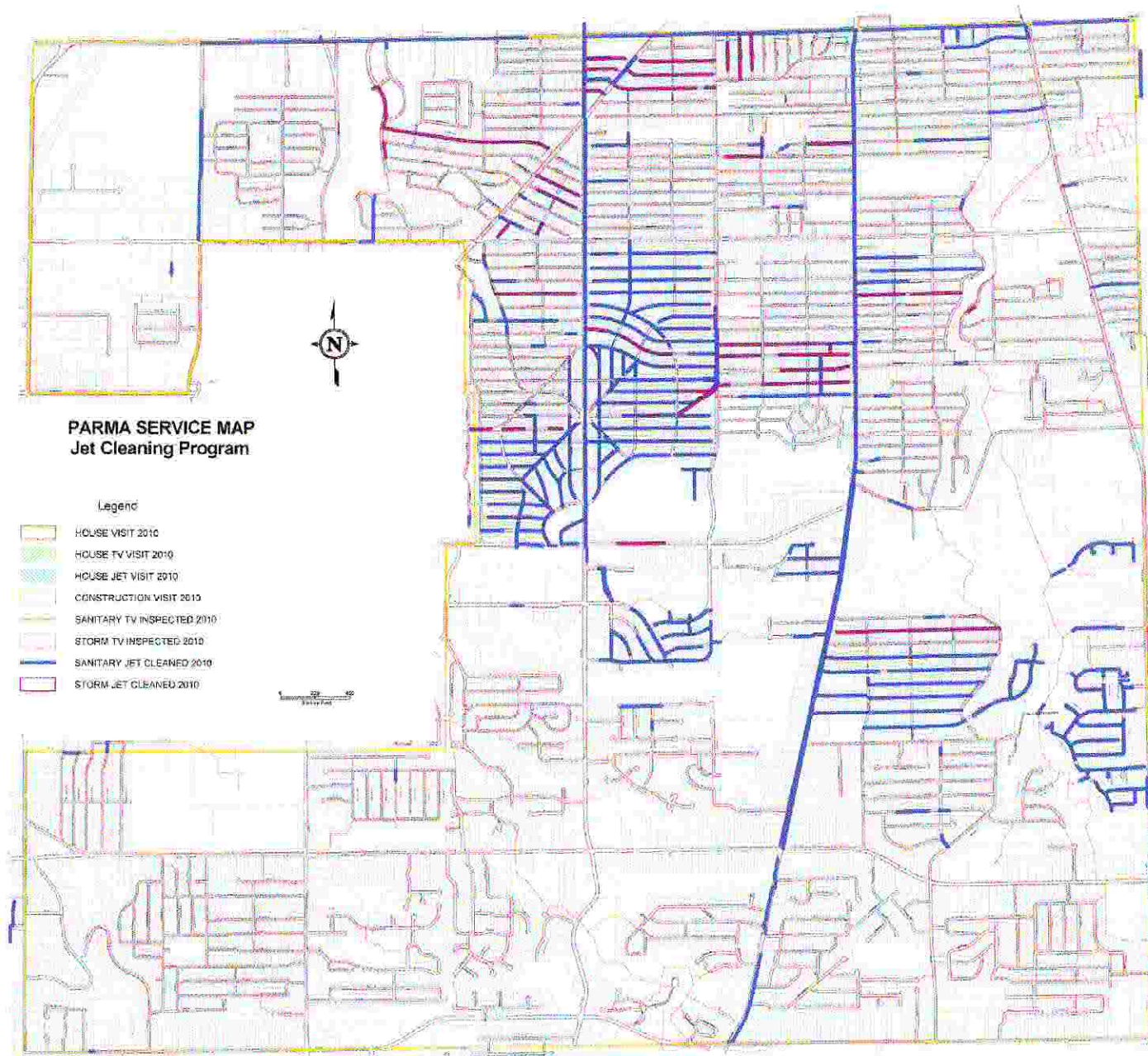
HOUSE CALLS



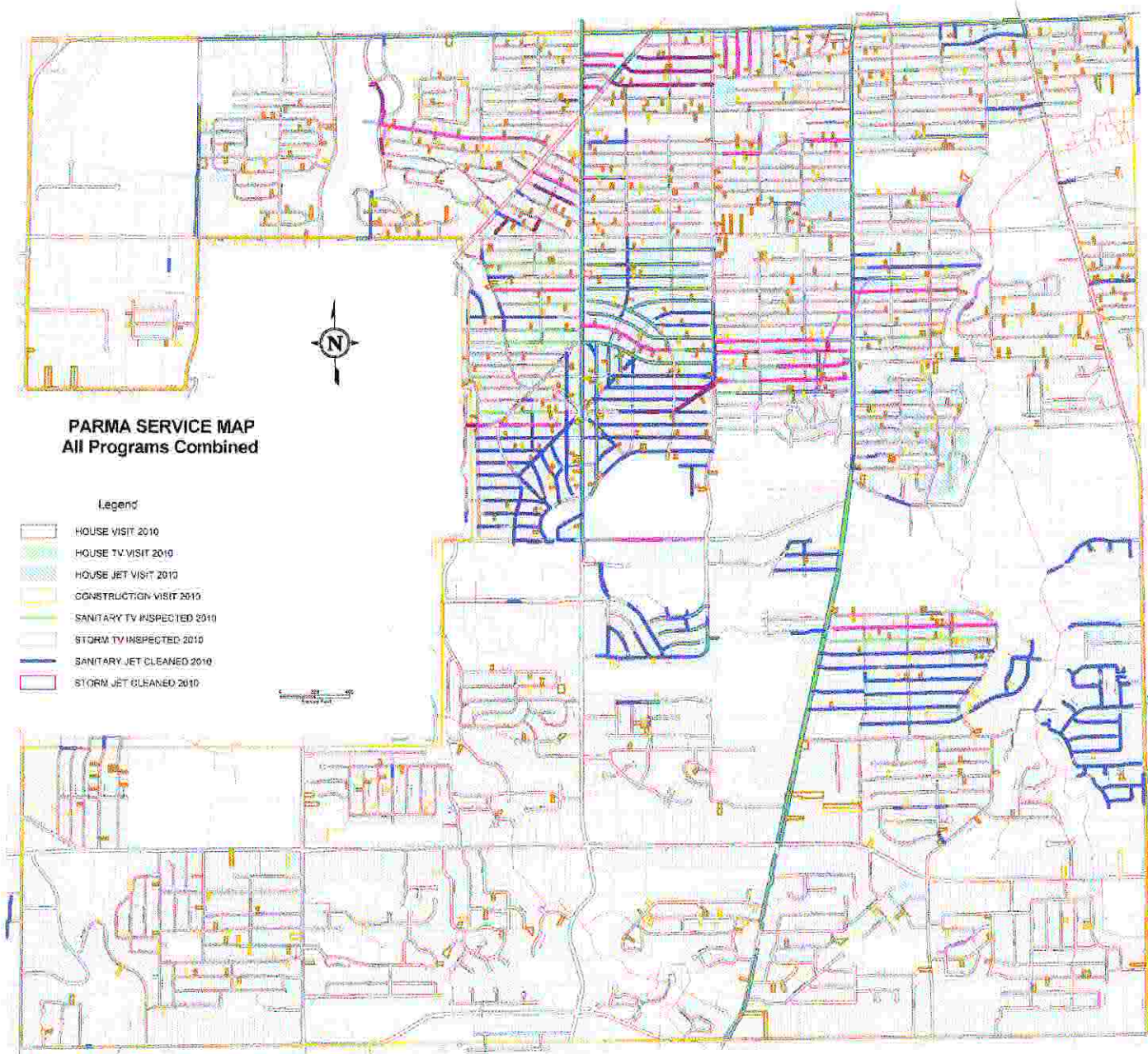
TELEVISION



JETTING



ALL SERVICES



CURRENT PROJECTS

Leaking Locations
Project Sites
Repair Locations

Triangle Area

Torrington Area

Ridgewood Study

Wellington/
Yorkshire Area

Brian &
Nelson
Sinkholes

The "Triangle" Area



The "Triangle" Area

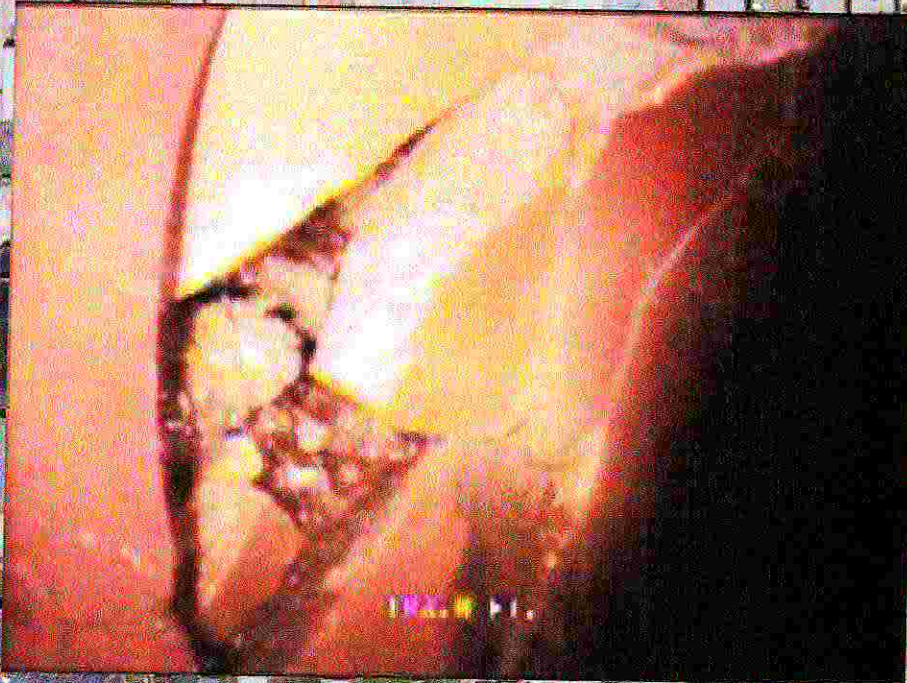


Typical Problems Found:

- Blocked pipes due to accumulated debris.



The "Triangle" Area



Typical Problems Found:

- Blocked pipes due to accumulated debris.
- Broken pipes in need of repair and/or replacement.

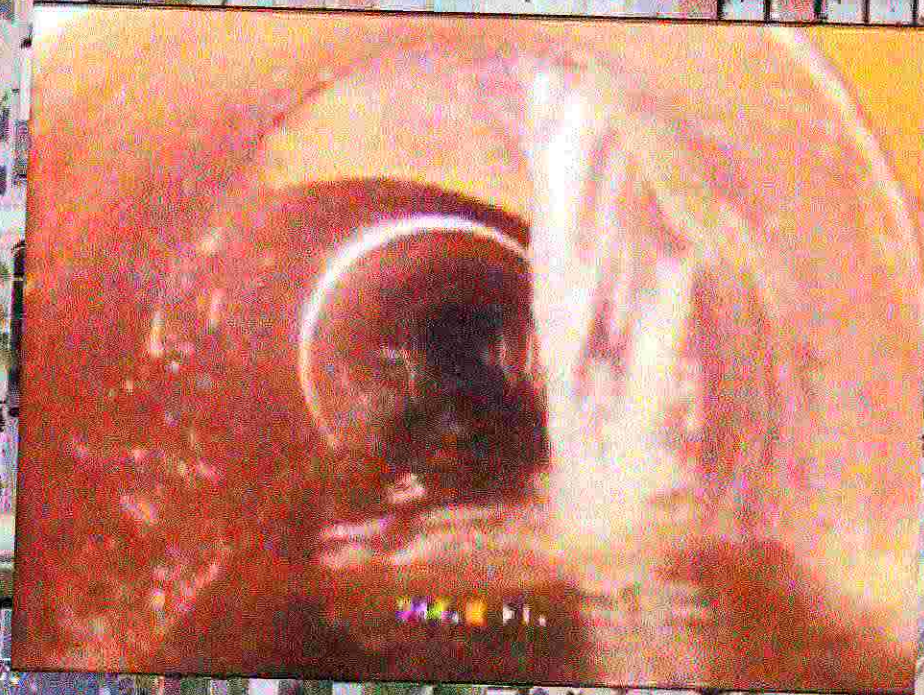
The "Triangle" Area



Typical Problems Found:

- Blocked pipes due to accumulated debris.
- Broken pipes in need of repair and/or replacement.
- **Laterals in need of cleaning.**

The "Triangle" Area



Typical Problems Found:

- Blocked pipes due to accumulated debris.
- Broken pipes in need of repair and/or replacement.
- Laterals in need of cleaning.
- Over-capacity sanitary sewers due to storm water entering the system.**

The "Triangle" Area

USMH: 5316 SAN
DSMH: LAVERNE SAN
DOWNSTREAM

6/21/2010
12:06

146.3 ft.

Typical Problems Found:

- Blocked pipes due to accumulated debris.
- Broken pipes in need of repair and/or replacement.
- Laterals in need of cleaning.
- Over-capacity sanitary sewers due to storm water entering the system
- Build-up of grease.

An aerial photograph of a residential neighborhood, likely in a city. The image shows a grid of streets with houses and trees. A yellow text box is overlaid in the center, containing the title 'The "Triangle" Area' and a list of solutions. The streets visible include Ridge Rd, Velma Ave, Lueda Ave, Laveme Ave, Maysday Ave, Pearl Rd, and Parma. There are also street numbers 42 and 3 visible.

The "Triangle" Area

Solutions

- Pipes have been cleaned.
- Repair and/or replace broken pipe.
- Clean and inspect laterals.
- Determine where storm water is entering the sanitary sewer.
- Grease has been removed.

An aerial photograph of a residential neighborhood in Torrington, Vermont. The map shows a grid of streets including Montauk Ave, Torrington Ave, Pershing Ave, Wood Ave, and Liggett Dr. Vertical streets shown include W 48th St, W 44th St, W 43rd St, W 41th St, W 40th St, W 39th St, W 38th St, W 37th St, W 36th St, W 35th St, W 34th St, W 33rd St, W 32nd St, W 31st St, W 30th St, W 29th St, W 28th St, W 27th St, W 26th St, W 25th St, W 24th St, W 23rd St, W 22nd St, W 21st St, W 20th St, W 19th St, W 18th St, W 17th St, W 16th St, W 15th St, W 14th St, W 13th St, W 12th St, W 11th St, W 10th St, W 9th St, W 8th St, W 7th St, W 6th St, W 5th St, W 4th St, W 3rd St, W 2nd St, W 1st St. A yellow box at the top center contains the text "Torrington & W. 48th St. Area".

Torrington & W. 48th St. Area

Typical Problems Found:

- Blocked pipes due to accumulated debris.
- Broken pipes in need of repair and/or replacement.
- Laterals in need of cleaning.
- Over-capacity sanitary sewers due to storm water entering the system

An aerial photograph of a residential neighborhood in Torrington, Vermont. The map shows a grid of streets including Montauk Ave, Torrington Ave, Millford Rd, Pershing Ave, Wood Ave, and Liggett Dr. Vertical streets shown include W 48th St, W 44th St, W 54th St, W 45th St, W 44th St, W 43rd St, and State Rd. A Polish National Cemetery is visible in the top left. A yellow box at the top center contains the title "Torrington & W. 48th St. Area".

Torrington & W. 48th St. Area

Solutions:

- Pipes have been cleaned
- Removed hard calcium deposits from sanitary that severely limited carrying capacity
- Broken pipes in need of repair and/or replacement.
 - Laterals in need of cleaning.
- Continue investigation/reduction of storm water entering the sanitary sewer

An aerial photograph of a residential neighborhood in the Wellington-Yorkshire Area. The map shows a grid of streets including Wellington Ave, Yorkshire Ave, W 44th St, W 48th St, Grantwood Dr, Woodrow Ave, and State Rd. A central white text box with a green border contains the title and a list of typical sewer problems. The background shows dense residential development with houses, trees, and a large green field at the bottom.

Wellington-Yorkshire Area

Typical Problems Found:

- Blocked pipes due to accumulated debris.
- Broken & collapsed pipes in need of repair and/or replacement.
- Collapsed Wyes
- Over-capacity sanitary sewers due to storm water entering the system



Wellington-Yorkshire Area

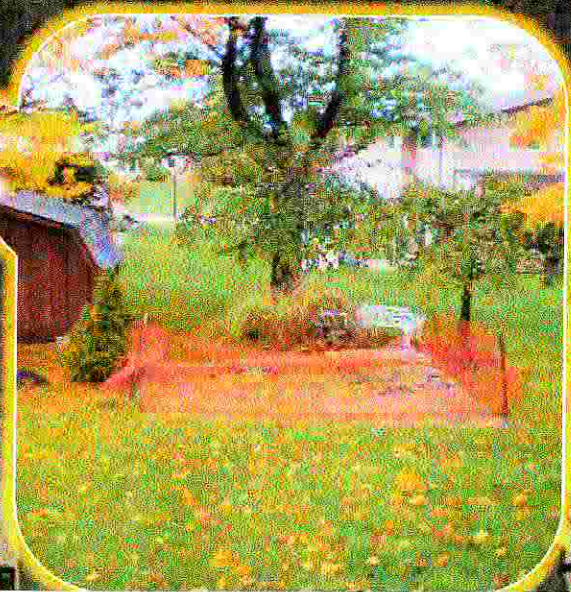
- Sanitary and storm pipes have been cleaned
- 18 point repairs made on Yorkshire to correct collapsed wyes and broken pipe
- Over 120 LF of sanitary and storm sewer replaced on Wellington due to near failure of sanitary sewer
- Approx. 450 lf of sanitary sewer along Woodrow Ave. added to lining project
- Continue investigation/reduction of storm water entering the sanitary sewer

Brian & Nelson Sinkholes

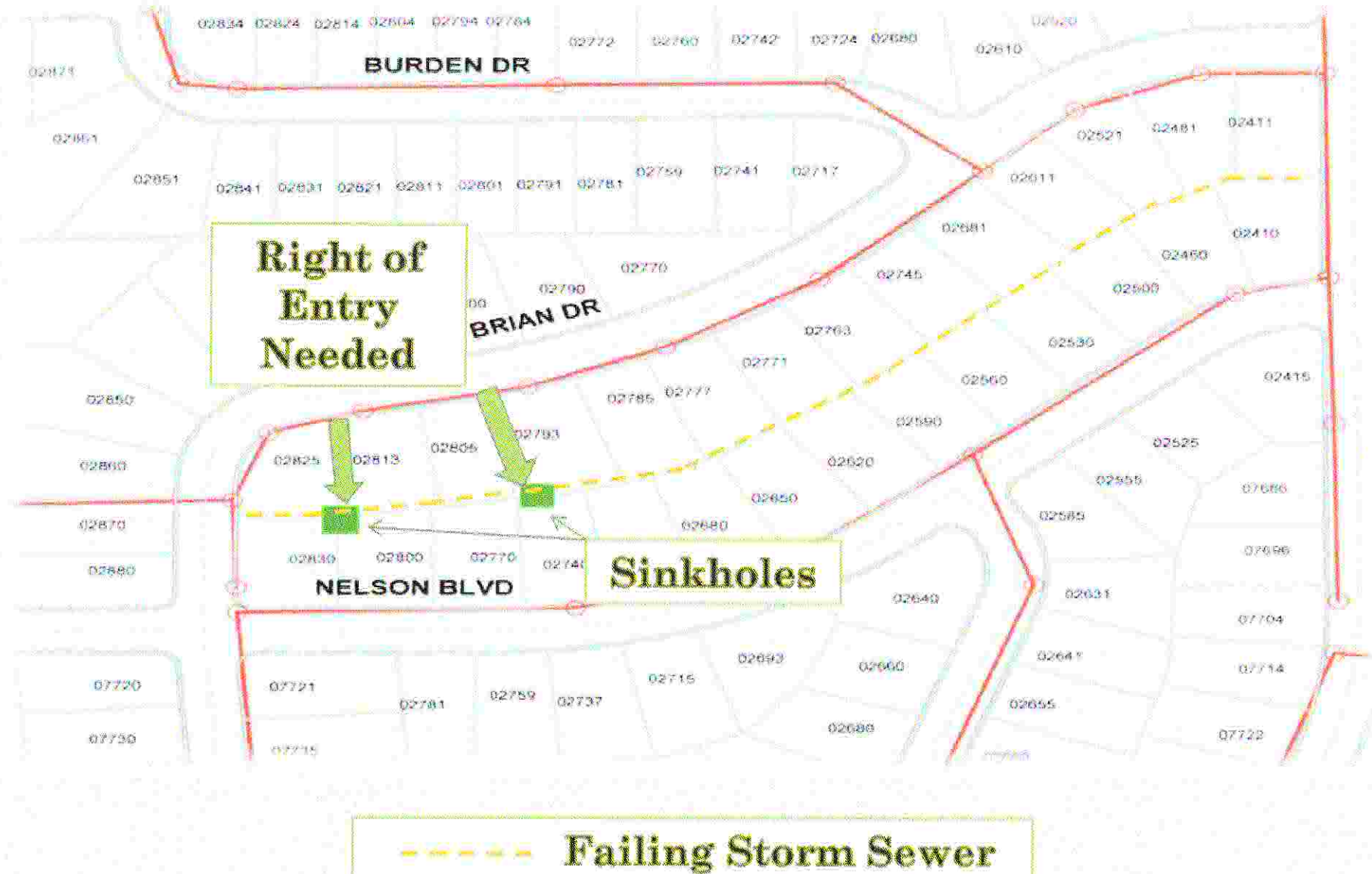
Brian Dr



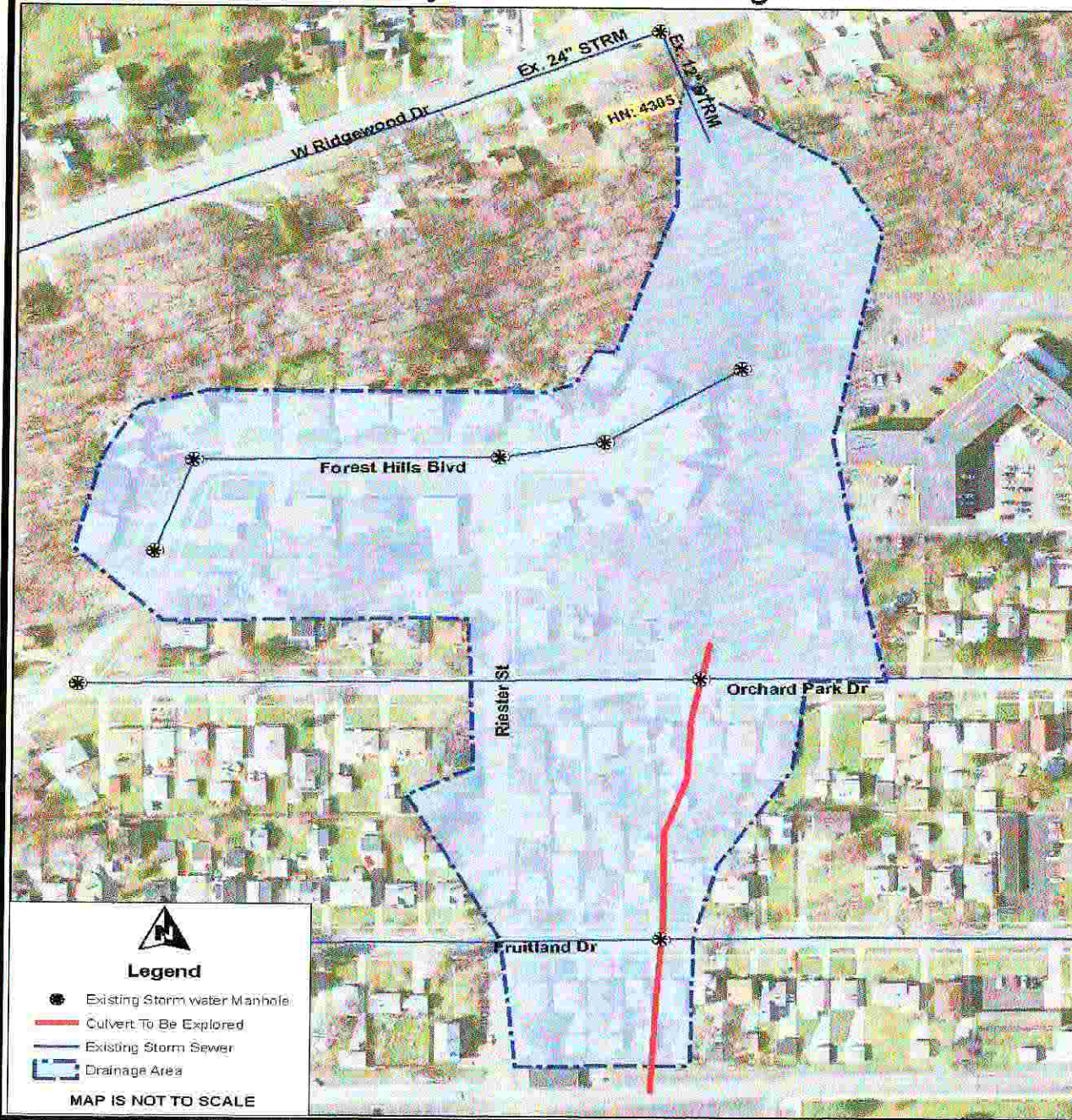
Nelson Blvd



Brian & Nelson Sinkholes



Storm Water Study: 4305 West Ridgewood Drive



Est. EXPENSES ENDING 9/30/2010

Activity	Total
Sewer Maintenance	\$1,988,000
Pump Station Operation and Maintenance	\$18,000
Engineering	\$230,000
Inspection	\$159,000
Total Expenses	\$2,395,000

Revenue**2009****2010- Projection**

Beginning Balance

(\$157,442)

\$2,312,505

Sanitary

\$3,090,400

\$3,241,624

Storm

\$514,088

\$499,318

Water

\$308,452

\$299,591

Subtotal:

\$3,755,498

\$6,353,056

Expenses

Sanitary

\$1,290,875

\$2,700,000

Storm

\$139,918

\$350,000

Water

\$0

\$0

Capital

\$12,200

\$325,000

Subtotal:

\$1,442,993

\$3,375,000

Ending Cash Balance**\$2,312,505****\$2,950,825**

2010 ENDING BALANCE

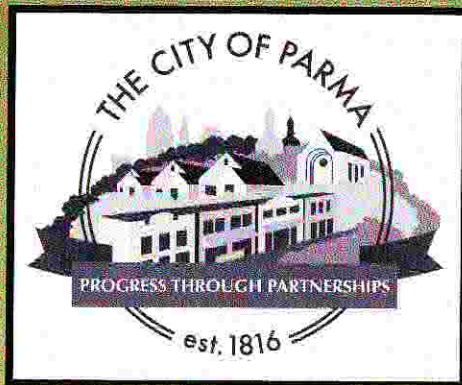
Sanitary	\$1,629,883
Storm	\$374,170
<u>Water</u>	<u>\$308,452</u>
Total	\$2,312,505

Ending Balance will be used for Loan payments, Capital Improvement Projects, NPDES, such as:

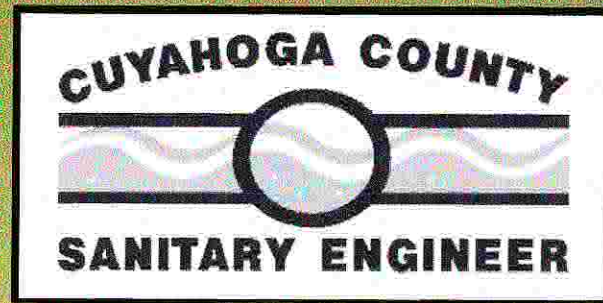
- Fernhill Sanitary & Storm: \$1,615,072
Est. Debt Service: \$104,654/Year
- Sewer & Manhole Rehab: \$2,250,416
Est. Debt Service: \$123,123/Year

PROGRESS THROUGH PARTNERSHIPS

Maintaining Your Sanitary Sewers



Dean DePiero
Mayor of Parma



Robert C. Klaiber, Jr., P.E., P.S.
Cuyahoga County Sanitary Engineer

For information call 216-443-8211
or visit www.sanitaryeng.cuyahogacounty.us